UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,223	02/03/2004	Kenji Ishii	9683/165	2202

79510 7590 03/12/2009

NTT Mobile Communications Network I/BHGL
P.O. Box 10395
Chicago, IL 60610

EXAMINER	
BATURAY, ALICIA	
ART UNIT	PAPER NUMBER
2446	
MAIL DATE	DELIVERY MODE
03/12/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,223	ISHII ET AL.	
	Examiner	Art Unit	
	Alicia Baturay	2446	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to a request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), which was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 January 2009 has been entered.

2. Claims 1, 4 and 12 were amended.

3. Claims 13 and 14 were added.

4. Claims 1-14 are pending in this Office Action.

Response to Arguments

5. ***Applicant Argues:*** Applicants respectfully maintain that the Nguyen reference does not teach the "node function controlling unit" as currently recited in claims 1, 4 and 10. Of note, the response above does not mention or even suggest any type of reassignment or relocation of any node functions – particularly in response to an instruction of relocation and in which the current available node resource is analyzed based on statues of the node resources. Rather, the response focuses on the restructuring of the path.

In Response: The examiner respectfully submits that Nguyen teaches a node function location controlling unit, in response to an instruction of relocation (If one or more errors or congestion events are detected, Data Collection records such detections in Data Store.

Following such a detection, a messaging step is performed which sends an activation message to Analysis Engine), analyzing current available node resources based on the statuses of the node resources managed by the resource managing unit (Following, Analysis Engine retrieves data necessary for analysis from Data Store. This preferably includes: Network Constraints, which include router constraints), determining new node locations of node functions (Configuration Engine retrieves the new solution from Data Store), and relocating the node functions at the new node locations into an optimum condition (The next step determines the optimal change sequences. Assume there are 3 demands 1, 2, 3 between Node A and Node E. Also assume that these demands are being routed as follows: Before Reroute: Demand 1 uses path A-C-E. Demand 2 uses path A-C-D-E. Demand 3 uses path A-B-D-E. Suppose there is [a] congestion on arc AC. Now let us assume that the routing solution is determine[d] to be as follows: Demand 1 uses path A-C-E. Demand 2 uses path A-B-D-E. Demand 3 uses path A-B-C-D-E. The difference between the solution reroute and the original routing shows two changes, that in associated with Demand 2 and Demand 3. The next step is to determine which of the two changes need to happen first. Therefore it is more efficient and produces less network impact on the network if Demand 3 is rerouted first to path A-B-C-D-E. Following Demand 2 can be rerouted to path A-B-D-E. Configuration process makes the change to the elements in Network, to affect the routing of various demands in Network – see Nguyen, page 21, line 9 – page 26, line 19).

The examiner points out that Nguyen teaches reassignment of node functions (Node 6 might not have the resources to serve all three demands at the same time, thereby creating Congestion. Upon recognizing this Congestion the servers may create Reroute to reroute

some or all Traffic to avoid Node 6 to Node 12 – see Nguyen, page 15, lines 6-10) in response to an instruction of relocation (*If one or more errors or congestion events are detected*, Data Collection records such detections in Data Store. Following such a detection, a messaging step is performed which sends an activation message to Analysis Engine) and in which the current available node resource is analyzed based on statuses of node resources (Servers can then evaluate, following Demand 1 utilizing Reroute, which is the "best route," the prior route or Reroute. If Reroute is still the best route then Demand 3 is rerouted to Reroute. However, if the prior route is the "best route" again, following Demand 1 utilizing Reroute, then Demand 3 utilizes the prior route – see Nguyen, page 16, line 22 – page 17, line 5). This renders the rejection proper, and thus the rejection stands.

6. ***Applicant Argues:*** Applicants respectfully maintain that the Nguyen reference does not teach the "adaptive control determining unit" as recited in claims 1, 4, and 10. The adaptive control determining unit makes the following determination: "determining whether or not it is necessary to transmit *either or both* of said instruction of relocation to said node function location controlling unit and said instruction of restructuring to said path structure controlling unit." In other words, the adaptive control determining unit determines whether to relocated the nodes **and/or** restructure the paths. Reviewing the response to the Applicants' argument, the Office Action cites the identical disclosure as support for teaching "the path structure unit" that restructures the paths, the "node function controlling unit" that relocates the functions of the nodes, and the "adaptive control determining unit" that makes the decision

whether it is necessary to instruct one or both of the "path structure unit" and the "node function controlling unit". Applicants question how it is possible that the same disclosure can support that the Nguyen reference teaches restructuring the paths, relocating the functions of the nodes, and the determination whether to one or both of restructuring the paths and relocating the functions of the nodes.

In Response: The examiner reads the limitation as the determining unit determines whether to transmit *either of* said instruction of relocation to said node function location controlling unit *or* said instruction of restructuring to said path structure controlling unit. Because of the "or" in this limitation, the examiner is only required to find one of the limitations presented on either side of the "or" in order to meet the requirements for the rejection of this limitation.

Thus, the examiner respectfully submits that Nguyen teaches an adaptive control determining unit for determining whether or not it is necessary to transmit *either* or both *of* said instruction of relocation to said node function location controlling unit and said instruction of restructuring to said path structure controlling unit (Analysis Engine retrieves data necessary for analysis from Data Store. The retrieved data is used in the next step of problem formulations. This entails the formulation of the routing optimization problem. The next step is the step of problem solving which formulates an optimized routing solution. Following this step…a step of messaging to Configuration Engine is performed. Configuration Engine retrieves both the current solution and the new solution from Data Store. The next step determines the optimal change sequences, which calculates the changes

as to ensure minimal impact to existing traffic. The difference between the solution reroute and the original routing shows two changes…must be made to the network routing configuration. Configuration Process makes the changes to the elements in Network, to affect the routing of various demands in Network – see Nguyen, page 22, line 3 – page 26, line 19). This renders the rejection proper, and thus the rejection stands.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Nguyen (WO 02/29427).

9. With respect to claim 1, Nguyen teaches a communication network system comprising: a resource managing unit for managing statuses of node resources in a network and statuses of link resources in said network (Nguyen, Fig. 3, elements 220 and 250; page 18, line 19 – page 19, line 11), a node function location controlling unit, in response to an instruction of relocation, analyzing current available node resource based on the statuses of the node resources managed by the resource managing unit, determining new node locations of node

functions, and relocating the node functions at the new node locations into an optimum condition (Nguyen, page 21, line 9 – page 26, line 19), a path structure controlling unit for restructuring a structure of paths in said network into an optimum condition, in accordance with said statuses of link resources which are managed by said resource managing unit (Nguyen, page 20, line 18 – page 21, line 13), in response to an instruction of restructuring (Nguyen, page 26, line 20 - page 27, line 15), and an adaptive control determining unit for determining whether or not it is necessary to transmit either or both of said instruction of relocation to said node function location controlling unit and said instruction of restructuring to said path structure controlling unit on the basis of said statuses of node resources and said statuses of link resources which are managed by said resource managing unit (Nguyen, page 22, line 3 – page 26, line 19), and transmitting said instruction of relocation when the transmission of said instruction of relocation is determined to be necessary or transmitting said instruction of restructuring when the transmission of said instruction of restructuring is determined to be necessary (Nguyen, page 24, line 16 – page 26, line 19).

10. With respect to claim 2, Nguyen teaches the invention described in claim 1, including a communication network system, further comprising:

Service controlling devices each of which is one of said functional nodes and is capable of changing its own functions and data used for the functions, and comprises resources for providing communication services or data transfer services, data transferring devices each of which is one of said functional nodes and is capable of changing its own functions, data used for the functions and connection statuses of paths for data communications, and comprises

resources for providing communication services or data transfer services (Nguyen, page 18, line 19 – page 20, line 11), and a network structure controlling device which is connected to said service controlling devices and to said data transferring devices, wherein, said network structure controlling device comprises said resource managing unit, said node function location controlling unit, said path structure controlling unit and said adaptive control determining unit (Nguyen, page 26, lines 1-19).

11. With respect to claim 3, Nguyen teaches the invention described in claim 1, including a communication network system, further comprising:

Service controlling devices each of which is one of said functional nodes and is capable of changing its own functions and data used for the functions, and comprises resources for providing communication services or data transfer services, data transferring devices each of which is one of said functional nodes and is capable of changing its own functions, data used for the functions and connection statuses of paths for data communications, and comprises resources for providing communication services or data transfer services (Nguyen, page 18, line 19 – page 20, line 11), network structure controlling devices which are distributed in said network, each of which comprises said node function location controlling unit, said path structure controlling unit and said adaptive control determining unit (Nguyen, page 26, lines 1-19), and a lock controlling unit for controlling locks of resources, when each of the resources should be controlled by only one of said network structure controlling devices to achieve the relocation or the restructuring, for avoiding each of the resources being

controlled by more than one of said network structure controlling devices (Nguyen, page 26, lines 1-19).

12. With respect to claim 10, Nguyen teaches an adaptive control method comprising:

A node resource status monitoring step for a service controlling device and a data transferring device, which are included in a communication network system, to monitor statuses of node resources, which are resources for providing communication services or data transfer services, and to transmit data indicating said statuses of node resources, a link resource status monitoring step for said data transferring device to monitor statuses of link resources, which are resources for providing data transfer services, and to transmit data indicating said statuses of link resources, a network resource status collecting step for a network resource status managing device in said communication network system to receive and store said data indicating said statuses of node resources transmitted in said node resource status monitoring step and to receive and store said data indicating said statuses of link resources transmitted in said link resource status monitoring step (Nguyen, Fig. 3, elements 220 and 250; page 18, line 19 – page 19, line 11), an adaptive control determining step for a network structure controlling device in said communication network system to determine whether it is necessary to relocate functions and data for the functions of said service controlling device or of said data transferring device, or to determine whether it is necessary to restructure paths connected to said data transferring device, on the basis of data indicating said statuses of node resources and data indicating said statuses of link resources which are stored in said network resource status managing device (Nguyen, page 20, line 18

– page 21, line 13), or in accordance with a request for an adaptive control of said node resources or said link resources from an external device (Nguyen, page 26, line 20 - page 27, line 15), a planning step where said network structure controlling device makes a plan of relocation of the functions and the data for the functions so that said node resources and said link resources can be used in an optimum condition, and transmits an instruction to instruct said relocation of the functions and the data for the functions to said service controlling device or to said data transferring device, when it is determined to be necessary to relocate the functions and the data for the functions in said adaptive control determining step, or, said network structure controlling device makes a plan of restructuring of the paths so that said node resources and said link resources can be used in an optimum condition, and transmits an instruction to instruct said restructuring of the paths to said service controlling device or to said data transferring device, when it is determined to be necessary to restructure the paths in said adaptive control determining step (Nguyen, page 22, line 3 – page 24, line 14), and an optimizing step where said service controlling device or said data transferring device changes its functions and data for the functions in accordance with said instruction to instruct said relocation of the functions and the data for the functions, or, said data transferring device changes its paths in accordance with said instruction to instruct said restructuring of the paths (Nguyen, page 24, line 16 – page 26, line 19).

13. With respect to claim 11, Nguyen teaches the invention described in claim 10, including an adaptive control method wherein:

In said planning step, said network structure controlling device further transmits, to said network resource status managing device, a request for a lock control for avoiding said node resources and said link resources, which are controlled by said network structure controlling device after the relocation, being controlled by another network structure controlling device, when it is determined to be necessary to relocate the functions and the data for the functions in said adaptive control determining step, or, said network structure controlling device further transmits, to said network resource status managing device, a request for a lock control for avoiding said node resources and said link resources, which are controlled by said network structure controlling device after the restructuring, being controlled by another network structure controlling device, when it is determined to be necessary to restructure the paths in said adaptive control determining step, and said adaptive control method further comprises a lock controlling step for said network resource status managing device to receive the request for a lock control which is transmitted in said planning step, and to control locks of said node resources and said link resources in accordance with the request for a lock control (Nguyen, page 26, lines 1-19).

14. With respect to claim 12, Nguyen teaches the invention described in claim 11, including an adaptive control method wherein:

In said planning step, said network structure controlling device makes an optimum plan of relocation of the functions and the data for the functions or an optimum plan of restructuring of the paths, on the basis of data on a draft plan of relocation of the functions

and the data for the functions and data on a draft plan of restructuring of the paths (Nguyen, page 24, line 16 – page 26, line 19).

15. With respect to claim 13, Nguyen teaches the invention described in claim 1, including a communication network system wherein the node function location controlling unit analyzes current available link resources based on the statuses of the link resources in said network managed by the resource managing unit (Nguyen, pages 18, line 19 – page 19, line 2); wherein the node function location controlling unit determining interim node locations of interim node function; wherein the node function location controlling unit transmits the interim node locations of the interim node functions to the path structure controlling unit; wherein the node function location controlling unit receives data of link path restructuring from the path structure controlling unit; and wherein the node function location controlling unit finalizes the new node locations of the node functions based on the data of the link path restructuring in order to achieve the optimum condition (Nguyen, page 24, line 16 – page 26, line 19).

16. Claims 4-8 do not teach or define any new limitations above claims 1 and 9-12 and therefore are rejected for similar reasons.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen and further in view of Weinert et al. (U.S. 7,454,516).

Nguyen teaches the invention substantially as claimed including a method and system of providing for central control and intelligent routing of data network traffic where a server is operatively connected to a network and is capable of receiving information regarding network status, specifically capable of recognizing network congestion, formulating a solution to the network congestion and re-configure network traffic to reroute around network congestion (see Abstract).

19. With respect to claim 9, Nguyen teaches a network resource status managing device comprising: a resource status collecting unit for collecting data on statuses of node resources and data on statuses of link resources in a network through said network, a network resource status storing unit for storing said data on statuses of node resources and said data on statuses of link resources which are collected by said resource status collecting unit (Nguyen, Fig. 3, elements 220 and 250; page 18, line 19 – page 19, line 11), a network structure controlling

device for relocating functions of nodes or for restructuring paths in said network (Nguyen, page 22, line 3 – page 26, line 19).

Nguyen does not explicitly teach locking control of a certain resource preventing the network structure controlling device from relocating functions of the certain resource.

However, Weinert teaches a lock controlling unit, in response to a request for a lock control, for a locking control of a certain resource thereby preventing the network structure controlling device from relocating functions of the certain resource and from restructuring of the paths related to the certain resource (Weinert, col. 10, line 62 – col. 11, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nguyen in view of Weinert in order to enable locking control of a certain resource preventing the network structure controlling device from relocating functions of the certain resource. One would be motivated to do so in order to attempt to avoid overload of any single machine by directing only a percentage of the incoming requests for web pages to any one content server.

20. With respect to claim 14, Nguyen teaches the invention described in claim 9, including a network resource status managing device comprising: a resource status collecting unit for collecting data on statuses of node resources and data on statuses of link resources in a network through said network, a network resource status storing unit for storing said data on statuses of node resources and said data on statuses of link resources which are collected by said resource status collecting unit (Nguyen, Fig. 3, elements 220 and 250; page 18, line 19 –

page 19, line 11), a network structure controlling device for relocating functions of nodes or for restructuring paths in said network (Nguyen, page 22, line 3 – page 26, line 19).

Nguyen does not explicitly teach locking control of a certain resource preventing the network structure controlling device from relocating functions of the certain resource.

However, Weinert teaches a lock controlling unit, in response to a request for a lock control, for a locking control of a certain resource thereby preventing the network structure controlling device from relocating functions of the certain resource and from restructuring of the paths related to the certain resource (Weinert, col. 10, line 62 – col. 11, line 2) and wherein the network structure controlling device comprises a plurality of network structure controlling devices, wherein a certain network structure controlling device controls the certain resource, and wherein the lock controlling unit locks control from a remainder of the plurality of network structure controlling devices so that only the certain network structure controlling device controls the certain resource (Weinert, col. 12, line 65 – col. 13, line 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nguyen in view of Weinert in order to enable locking control of a certain resource preventing the network structure controlling device from relocating functions of the certain resource. One would be motivated to do so in order to attempt to avoid overload of any single machine by directing only a percentage of the incoming requests for web pages to any one content server.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Baturay whose telephone number is (571) 272-3981. The examiner can normally be reached at M-Th 7am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Pwu can be reached on (571) 272-6798. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alicia Baturay
March 12, 2009

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2446